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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/753,366	01/09/2004	Kenichi Moriwaki	Q79365	6407

23373 7590 06/29/2004

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EXAMINER

RICKMAN, HOLLY C

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/753,366	MORIWAKI ET AL.	
	Examiner	Art Unit	
	Holly Rickman	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/13/04</u> . | 6) <input type="checkbox"/> Other: ____. |

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 and 9-14 rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-254128 (reference paragraph numbers refer to translated portion submitted by Applicant) in view of Kaitsu et al. (US 6562481).

JP 7-254128 teaches a magnetic recording medium having a polymeric substrate, a first ceramic underlayer formed from compounds of non-metal elements such as SiO₂, or Ti containing compounds such as TiC, a second underlayer formed from Cr or a Cr alloy, and a magnetic layer formed from a CoPtCr alloy (see paragraphs 11-13). The reference fails to teach the use of a nonmagnetic compound in the magnetic layer.

Kaitsu et al. teach a magnetic recording medium having a granular magnetic layer formed from a CoPtCr alloy grains with SiO₂ at the grain boundaries effectively decoupling the magnetic grains and improving the signal to noise ratio (see Fig. 3; col. 10, lines 11-27).

It would have been obvious to one of ordinary skill in the art at the time of invention to add silica to the CoPtCr magnetic layer taught in JP 7-254128 in order to decouple the magnetic grains and improve the signal to noise ratio.

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With respect to claim 5, it is noted that the "crystal growth defective" layer is less than 5nm with no lower limit. Thus, the claim includes the condition wherein thickness equal 0 nm and the layer is not present.

3. Claims 7-8 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-254128 (reference paragraph numbers refer to translated portion submitted by Applicant) in view of Kaitsu et al. (US 6562481) and further in view of Shinohara et al. (US 6740383).

The combination of JP 7-254128 in view of Kaitsu et al. as applied above teaches all of the limitations of the claims except for the claimed surface roughness of the medium.

Shinohara et al. disclose a magnetic recording medium and teach that the surface roughness of the medium is preferably 1nm or less. The reference teaches that surface roughness affects stiction and frictional force associated with contact with a floating magnetic head are affected by the surface roughness of the medium (Fig. 14, Fig. 16, col. 16, lines 11-14).

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to determine the optimal surface roughness for the medium taught by JP 7-254128 in order to achieve reduced stiction and friction associated with the use of a magnetic head. Such an optimization would have been obvious because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J. Thibodeau can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Holly Rickman
Primary Examiner
Art Unit 1773

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June 28, 2004